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EXAMINER	
NG, CHRISTINE Y	
ART UNIT	**PAPER NUMBER**
2616	

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/014,323	COLE ET AL.	
	Examiner	Art Unit	
	Christine Ng	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-8, 10 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,049,524 to Fukushima et al.

Referring to claims 1, 8 and 10, Fukushima et al disclose in Figure 2 a router having a designating routing facility (route calculation unit 11a) and a standby routing facility (route calculation unit 11b) for processing information related to routing. Refer to Column 5, lines 53-59. The method comprises:

a) Executing, with the designated routing facility, a routing protocol (shortest path first SPF algorithm) to generate network topology information. Route calculation unit 11a determines least cost paths in the network using the link-state database 22 and registers the shortest paths in the routing table 19. Refer to Column 6, lines 50-60.

b) Providing a copy of network state information received (network link-state information) by the designated routing facility to the standby routing facility. "Network link-state information that the route calculation unit 11a received from the routers 30 is first held in the route calculation unit 11a and further sent through the internal bus 12 to the route calculation unit 11b" (Column 7, lines 34-38).

c) Executing, with the standby routing facility, a routing protocol (SPF algorithm) based on the network information (network link-state information) provided by the designated routing facility, but such that signaling from the standby routing facility to external nodes is suppressed. After receiving the network link-state information from the route calculation unit 11a, route calculation unit 11b fetches data from its link-state database 22, performs route calculations using SPF, and holds routing tables with the same content as route calculation unit 11a. Refer to Column 7, lines 39-45. Route calculation unit 11b does not exchange routing packets through forwarding process units 13 until switchover has occurred. Refer to Column 7, lines 30-34 and lines 46-52 and Column 9, lines 6-37.

Referring to claim 3, Fukushima et al disclose in Figure 2 that the routing protocol is a link state routing protocol (SPF algorithm). Refer to Column 1, lines 16-30 and Column 6, lines 50-60.

Referring to claim 4, refer to the rejection of claims 1, 8 and 10. Furthermore, Fukushima et al disclose in Figure 2 wherein the act of providing a copy of network topology information is effected by having the designated routing facility flood such information onto a local area network (internal bus 12) within the router. Refer to Column 7, lines 34-38 and Column 9, lines 6-10.

Referring to claim 5, Fukushima et al disclose in Figure 2 that the method further comprises: d) if a failure of the designated routing facility is determined, then electing the standby routing facility as the designated routing facility. Refer to Column 7, lines 46-52.

Referring to claim 6, Fukushima et al disclose in Figure 2 that the act of electing includes having the standby routing facility assume identification information of the failed designated routing facility. Refer to Column 7, lines 46-52. When there is a switchover, other routers 30 "do not regard the multiplex router 10 as having run into a failure nor do they rewrite the routing tables they hold..." (Column 8, lines 15-21).

Referring to claim 7, Fukushima et al disclose in Figure 2 that the designated routing facility and the standby routing facility share a common forwarding facility (forwarding process units 13). Refer to Column 7, lines 30-52.

Referring to claim 29, Fukushima et al disclose in Figure 2 that the router further comprises: c) means (state monitor module 20 in route calculation unit 11b) for electing the standby routing facility as a new designating routing facility if a failure of the designated routing facility is determined. Refer to Column 8, lines 45-54.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,049,524 to Fukushima et al in view of U.S. Publication No. 2002/0021675 to Feldmann.

Fukushima et al do not disclose that the routing protocol is the IS-IS protocol.

Feldmann disclose that an autonomous system AS typically employs an intradomain routing protocol, such as IS-IS, to select paths across the backbone. The routers use the IS-IS protocol to exchange link-state information and compute the shortest paths in the network. This information is used to construct a forwarding table. Refer to Sections 0022 and 0032. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the routing protocol is the IS-IS protocol, the motivation being that the IS-IS protocol is a typical intradomain routing protocol used to create forwarding tables.

5. Claims 11-13, 15-19, 20-28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,049,524 to Fukushima et al in view of U.S. Patent No. 6,347,085 to Kelly.

Referring to claim 11, 16, 18 and 19, Fukushima et al disclose in Figure 2 a router having, at a given time, a currently designated routing facility (route calculation unit 11a) and a current standby routing facility (route calculation unit 11b). Route calculation unit 11a is the currently designated routing facility and route calculation unit 11b is the current standby routing facility. Refer to Column 5, lines 53-59. The method comprises:

a) One router has redundant routing facilities. The router with two route calculation units 11a,11b is referred to as the "multiplex router device" to distinguish it from other routers 30. Refer to Column 5, lines 40-49.

c) Providing, with the currently designated routing facility, network information to

the external node. Before switchover, route calculation unit 11a sends a routing table to routers 30 through forwarding process units 13. Refer to Column 7, lines 39-52.

d) Providing, with the current standby routing facility, network information to the external node. After switchover, route calculation unit 11b exchanges routing protocol packets with routers 30 and sends a routing table to routers 30 through forwarding process units 13. Refer to Column 7, lines 39-52.

Fukushima et al do not disclose a) informing an external node (router 30) that the router has redundant routing facilities.

Kelly discloses a method of allowing communication between a packet-switched data network and a circuit-switched data network, wherein a telephone number is resolved into the IP address of a gateway. Using the gateway IP address, a calling party can direct packets from a PSTN network to an IP network, and vice versa. The calling party is also provided with a list of IP address of other redundant, alternate gateways through which to route packets in case the primary gateway fails. The calling party is informed that the network has redundant routing gateway facilities. Refer to Column 2, lines 49-53; Column 3, line 52 to Column 4, line 12; and Column 17, lines 21-34. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a) informing an external node that the router has redundant routing facilities. One would be motivated to do so in order so that the user knows that there are other routers to route packets through in case of failure.

Fukushima et al also do not disclose: b) informing an external node (router 30) of the identify of the currently designated routing facility.

Kelly discloses a method of allowing communication between a packet-switched data network and a circuit-switched data network, wherein a telephone number is resolved into the IP address of a gateway. Using the gateway IP address, a calling party can direct packets from a PSTN network to an IP network, and vice versa. The calling party is also provided with a list of IP address of other redundant, alternate gateways through which to route packets in case the primary gateway fails. Refer to Column 2, lines 49-53; Column 3, line 52 to Column 4, line 12; and Column 17, lines 21-34. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include: b) informing an external node of the identify of the currently designated routing facility, the motivation being so that the external router knows which routing facility to use to route packets in case of failure.

Referring to claim 12, Fukushima et al disclose in Figure 2 that the currently designated routing facility and current standby routing facility share a common forwarding facility (forwarding process units 13). Refer to Column 7, lines 30-52.

Referring to claims 13 and 17, Fukushima et al disclose in Figure 2 that the act of informing an external node that the router has redundant routing facilities includes generating and transmitting a message including an identification of the router. Routers communicate link-state information to construct a link-state database 22, which includes router ID's, as shown in Figure 4. Refer to Column 6, lines 29-47.

However, Fukushima et al do not disclose that the message includes address information of the currently designated routing facility and address information of the current standby routing facility.

Kelly discloses a method of allowing communication between a packet-switched data network and a circuit-switched data network, wherein a telephone number is resolved into the IP address of a gateway. Using the gateway IP address, a calling party can direct packets from a PSTN network to an IP network, and vice versa. The calling party is also provided with a list of IP address of other redundant, alternate gateways through which to route packets in case the primary gateway fails. Refer to Column 2, lines 49-53; Column 3, line 52 to Column 4, line 12; and Column 17, lines 21-34. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the message includes address information of the currently designated routing facility and address information of the current standby routing facility; the motivation being so that the external node can use the address of the designated routing facility to route packets until a switchover occurs, after which the external node uses the address of the standby routing facility to route packets; thereby facilitating communication without loss of information.

Referring to claim 15, Fukushima et al disclose in Figure 2 that the method further comprises: e) if a failure of the currently designated routing facility is determined, then i) electing the current standby routing facility as a new designated routing facility. Refer to Column 7, lines 46-52.

However, Fukushima et al do not disclose: ii) informing the external node of the identify of the newly elected new designated routing facility.

Kelly discloses a method of allowing communication between a packet-switched data network and a circuit-switched data network, wherein a telephone number is

resolved into the IP address of a gateway. Using the gateway IP address, a calling party can direct packets from a PSTN network to an IP network, and vice versa. The calling party is also provided with a list of IP address of other redundant, alternate gateways through which to route packets in case the primary gateway fails. Refer to Column 2, lines 49-53; Column 3, line 52 to Column 4, line 12; and Column 17, lines 21-34. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include: ii) informing the external node of the identify of the newly elected new designated routing facility; the motivation being so that in case the designated routing facility fails, the external node can use the new address of the alternate routing facility to route packets in case of failure.

Referring to claims 20, 24 and 28, Fukushima et al disclose in Figure 1 a router (router 30) adapted to interact with an external router (router 10) having, at a given time, a currently designated routing facility (Figure 2, route calculation unit 11a) and a current standby routing facility (Figure 2, route calculation unit 11b). Route calculation unit 11a is the currently designated routing facility and route calculation unit 11b is the current standby routing facility. Refer to Column 5, lines 53-59. As shown in Figure 2, the method comprises:

a) Accepting, from the external router, the identify of the currently designated routing facility. Refer to the rejection of claims 11, 16, 18 and 19.

b) Accepting, from the currently designated routing facility of the external router, network information. Route calculation unit 11a determines least cost paths throughout the network using the link-state database 22 and registers the shortest paths in the

routing table 19. Refer to Column 6, lines 50-60. Route calculation unit 11a then sends a routing table to the forwarding process units 13 to be sent to other routers 30. Refer to Column 7, lines 42-45.

c) Using the network information accepted (before switchover) from the currently designated routing facility of the external router for determining routes. Route calculation unit 11a then sends a routing table to the forwarding process units 13 to be sent to other routers 30 for determining routes. Refer to Column 7, lines 42-45.

d) Accepting (after switchover), from the current standby routing facility of the external router, network information, but not using it for determining routes. After receiving the network link-state information from the route calculation unit 11a, route calculation unit 11b fetches data from its link-state database 22, performs route calculations using SPF, and holds routing tables with the same content as route calculation unit 11a. Refer to Column 7, lines 39-45. Route calculation unit 11b does not exchange routing packets through forwarding process units 13 until switchover has occurred. Refer to Column 7, lines 30-34 and lines 46-52 and Column 9, lines 6-37.

Referring to claims 21 and 25, Fukushima et al disclose in Figure 2 that the method further comprises: e) storing the network information accepted from the current standby routing facility of the external router. After switchover, route calculation unit 11b exchanges routing protocols with other routers 30 through the forwarding process units 13. The routers 30 therefore store the information received from the forwarding process units 13.

Referring to claims 22 and 26, Fukushima et al disclose that the method further comprises:

e) Accepting, from the external router, an indication that the currently designated routing facility has failed. Refer to Column 7, lines 46-52 and Column 8, lines 45-54.

f) Accepting, from the external router, an indication that the formerly current standby routing facility has been elected as a new designated routing facility. Refer to Column 7, lines 46-52 and Column 8, lines 45-54.

g) Using path information from the newly elected designated routing facility. After switchover, route calculation unit 11b exchanges routing packets and routing tables through forwarding process units 13 to external routers 30. Refer to Column 7, lines 30-34 and lines 46-52 and Column 9, lines 6-37.

Referring to claims 23 and 27, Fukushima et al disclose that the method further comprises:

f) Accepting, from the external router, an indication that the currently designated routing facility has failed. Refer to Column 7, lines 46-52 and Column 8, lines 45-54.

g) Accepting, from the external router, an indication that the formerly current standby routing facility has been elected as a new designated routing facility. Refer to Column 7, lines 46-52 and Column 8, lines 45-54.

h) Using the stored path information from the formerly current standby routing facility that is now the newly elected new designated routing facility. After switchover, route calculation unit 11b exchanges routing packets and routing tables through

forwarding process units 13 to external routers 30. Refer to Column 7, lines 30-34 and lines 46-52 and Column 9, lines 6-37.

Referring to claim 30, Fukushima et al disclose in Figure 2 that the router further comprises: d) means (state monitor module 20 in route calculation unit 11b) for electing the current standby routing facility as a new designated routing facility if a failure of the currently designated routing facility is determined. Refer to Column 8, lines 45-54.

However, Fukushima et al do not disclose: e) means for informing the external node of the identify of the newly elected new designated routing facility. Refer to the rejection of claim 15.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,049,524 to Fukushima et al in view of U.S. Patent No. 6,347,085 to Kelly, and in further view of U.S. Publication No. 2002/0021675 to Feldmann.

Fukushima et al do not disclose that the act of informing an external node that the router has redundant routing facilities uses an existing BGP message format.

Feldmann disclose that an autonomous system AS typically employs an interdomain routing protocol, such as BGP, to select paths between different autonomous systems. The interdomain reachability information combined with the intradomain information is used to construct a forwarding table. Refer to Sections 0022, 0032 and 0036. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the act of informing an external node that the router has redundant routing facilities uses an existing BGP message format; the

motivation being that the IS-IS protocol is a typical interdomain routing protocol used to create forwarding tables.

Response to Arguments

7. Applicant's arguments filed March 20, 2006 have been fully considered but they are not persuasive.

Referring to the argument of independent claims 1, 4, 8 and 10 that Fukushima et al do not disclose that the active RCU provides a copy of network state information to the standby RCU (page 14, line 31 to page 15, line 32): Fukushima et al disclose that "Network link-state information that the route calculation unit 11a received from the routers 30 is first held in the router calculation unit 11a and further sent through the internal bus 12 to the route calculation unit 11b" (Column 7, lines 34-38). Although Fukushima et al disclose that the active RCU only passes changes to its LSDB 22 to the standby RCU (Column 10, line 30 to Column 11, line 15), the changes read on the claimed "copy of network state information". The active RCU 11a sends a notification of the update of network link-state information to the standby RCU 11b, so that the standby RCU 11b can determine whether the existing information in its LSDB 22 needs to be updated or deleted. The updated network link-state information is a copy of network state information, since the active RCU 11a will have the same updated network link-state information as the standby RCU 11b, after the standby RCU updates its LSDB. The active RCU 11a is providing a copy of its own updated network link-state changes to the standby RCU 11b.

Referring to the argument of independent claims 11, 16, 18, and 19 that

Fukushima et al do not disclose the act of informing an external node 30 that a router has redundant routing facilities (page 18, lines 9-29): Refer to the rejection of claims 11, 16, 18, 19.

Referring to the argument of independent claims 11, 16, 18, 19, 20, 24 and 28 that Fukushima et al do not disclose the act of providing, with a current standby routing facility, network information to the external node, or receiving such information by the external node (page 18, line 30 to page 19, line 28): Before switchover, route calculation unit 11a sends a routing table to routers 30 through forwarding process units 13. After switchover, route calculation unit 11b exchanges routing protocol packets with routers 30 and sends a routing table to routers 30 through forwarding process units 13. Refer to Column 7, lines 39-52. Route calculation unit 11a is a currently designated routing facility and the route calculation unit 11b us a current standby routing facility, since they are both currently the active and standby routing facilities of the multiplex router device.

Referring to the argument of independent claims 11, 16, 18, 19, 20, 24 and 28 that there is no motivation to combine Fukushima et al with Kelly (page 19, line 29 to page 20, line 14): Both the inventions of Fukushima et and Kelly deal with analogous art of routing packets using addressing in a network of routers. Both inventions also offer a backup solution to route the packets in case of failure of one of the devices in the network.

Referring to the argument of independent claims 11, 16, 18, 19, 20, 24 and 28

that it is unnecessary to inform the external node in the Fukushima et al patent of the identity of the designed routing facility (page 20, line 15 to page 21, line 16): It would be a modification to the invention of Fukushima et al to include informing the external node of the identity of the designed routing facility so that the node will know which routing facility it is using. Even though Fukushima et al disclose that the external nodes do not need to know which of the RCUs is active and which is standby, this information will allow external nodes to known which networks it is connected to. Each route calculation unit 11a and 11b is connected to different networks. For example, after switchover to RCU 11b, hello packets only contain "the identity of the networks connected to the route calculation unit 11b itself". Refer to Column 7, line 66 to Column 8, line 14.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Ng whose telephone number is (571) 272-3124. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C. Ng (N)
May 23, 2006

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